

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : Dieu Dai HUYNH  
Application No. : 10/797,826  
Filing Date : March 10, 2004  
Title : THERMAL TRANSFER IMAGE RECEIVING SHEET AND METHOD

Conf. No. : 1916  
TC/AU : 1796  
Examiner : Benjamin GILLESPIE

Customer No. : 81029  
Applicant's Ref. No. : 3525-US

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Commissioner for Patents  
P.O. Box 1450  
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**APPEAL BRIEF**

Dear Sir:

This brief is being submitted in connection with the appeal of the above-identified application. The requisite fee of \$540 under 37 CFR 41.20(b)(1) is being transmitted herewith.

In addition, the 2-month date for filing the Appeal Brief expired on December 26, 2009. Accordingly, Appellant respectfully requests and petitions that the deadline be extended for 4 month(s), up to and including, April 26, 2010. The requisite fee of \$1,730 under 37 CFR 1.17(a)(3) is being transmitted herewith.

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**I. REAL PARTY IN INTEREST**

The real party in interest in the present appeal is the Avery Dennison Corporation, the assignee of record by an Assignment recorded on March 26, 2004, at Reel 014465, Frame 0570.

## **II. RELATED APPEALS AND INTERFERENCES**

Appellant, Appellant's undersigned representative, and/or the assignee of the present application are unaware of any prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

### **III. STATUS OF CLAIMS**

Claims 7-10, 12 and 13 stand rejected.

Claims 1-6, 11, and 14-20 have been previously cancelled.

#### **IV. STATUS OF AMENDMENTS**

Appellant had previously filed no amendments to the claims after the final rejection dated April 24, 2009.

## V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 7 is directed to an aqueous dye receiving coating composition (paragraph [0022]). The dye receiving coating composition comprises a blend of:

(a) a first solvent free aqueous dispersion of aliphatic polyether-polyurethane resin (paragraph [0022]); and

(b) a second solvent free aqueous dispersion of aliphatic polyester-polyurethane resin (paragraph [0022]), wherein the weight ratio of resin (a) to resin (b) is in the range of 1:1 to 3:1, based on the resin solids of (a) and (b) (paragraph [0022]).

Claim 8 depends from claim 7, and further recites that the dye receiving coating composition further comprises a multifunctional crosslinking agent (paragraph [0028]).

Claim 9 depends from claim 8, and further recites that the dye receiving coating composition comprising a multifunctional crosslinking agent further comprises a polyfunctional aziridine (paragraph [0028]).

Claim 10 depends from claim 7, and further recites that the dye receiving coating composition is free of organic solvent (*originally filed claim 10*).

Claim 12 depends from claim 7, and further recites that the dye receiving coating composition comprising the aliphatic polyether-polyurethane resin further comprises the reaction product of an aliphatic polyisocyanate component and a polyether polyol component (paragraph [0024]).

Claim 13 depends from claim 7, and further recites that the dye receiving coating composition comprising the aliphatic polyester-polyurethane resin further comprises the reaction product of an aliphatic polyisocyanate component and a polyester polyol component (paragraph [0026]).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Whether claims 7, 8, 10, 12 and 13 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by Reischl et al. (U.S. Patent No. 3, 714,095).

Whether claims 7-10, 12 and 13 are unpatentable under 35 U.S.C. § 103(a) over Schafheutle et al. (U.S. Patent No. 5,334,690) in view of Babablie et al. (EP Patent No. 0 358 328) and Ozawa et al. (U.S. Publication No. 2002/0176968).

Whether claim 9 is unpatentable under 35 U.S.C. § 103(a) over Reischl et al. (U.S. Patent No. 3,714,095) in view of Rhoades et al. (U.S. Patent No. 5,028,824).



## VII. ARGUMENT

### Rejection Under 35 U.S.C. §102(b)

Claims 7-8, 10, and 12-13 have been rejected under 35 USC § 102(b) as being anticipated by Reischl et al (U.S. Patent No. 3,714,095). The Examiner contends that Reischl et al. teach a water-dispersible polyurethane resin comprising the reaction product of polyether and polyester polyol and aliphatic diisocyanate, and that although Reischl et al. do not explicitly teach the polyurethane useful in image transfer layers, based on a composition that is analogous to the claims, the polyurethane of Reischl et al. would inherently perform as a dye transfer layer.

Appellant respectfully disagrees with the Examiner's contention.

Initially, Appellants would like to point out that in order for a reference to anticipate a claim, each and every feature of the claim must be found within the cited reference as claimed. In the present rejection over Reischl, this burden has not been met.

Specifically, claim 7 recites that the aqueous dye receiving coating composition comprises a blend of two distinct **solvent free** aqueous dispersions. Reischl et al. does not disclose the claimed invention. Rather, Reischl et al. disclose an aqueous polyurethane dispersion comprising (a) a non-salt containing polyisocyanate polyaddition product obtained from compounds containing hydroxyl and/or amino groups and organic polyisocyanates and derived from organic solution, and (b) a salt type polyisocyanate polyaddition compound derived from a solid or solution, the weight ratio of (a) to (b) ranging from 99.5:1 to 2:3. (Reischl et al., column 1, lines 24-50.) The dispersion is produced by combining the non-salt containing polyisocyanate polyaddition product with a solvent, adding the salt type polyisocyanate polyaddition compound in the form of a solid or solution, effectuating salt formation by the addition of suitable acids, removing the solvent, and adding water to the solution to achieve the desired solids content of 60 percent. (Reischl et al., column 5, lines 49-57.) It is the conversion of the polyisocyanate polyaddition product with the salt-type polyisocyanate polyaddition compound and acid that yields the dispersion. (Reischl et al., column 1, lines 50-56.) It is the Examiner's position that although at column 5, lines 24-50 it is stated that the two resins are combined in the presence of solvent, "upon a proper reading of column 5, lines 50+, one would understand that the final aqueous dispersion does not contain solvent since the blend of polyurethane resin have 'the solvent removed,' i.e. Reischl et al clearly teach a blend of two different water dispersible polyurethane resins having no solvent present."

The claim limitation for each of component (a) and (b) that they independently be “solvent free” components is not taught by Reischl as Reischl uses a solvent in component (a). This is not the claimed invention as component (a) in claim 7 is “solvent free”. Moreover, the ration of 1:1 to 3:1, while being within the broad range disclosed by Reischl of 99.5:1 to 2:3, is clearly not taught as claimed. This broad range does not anticipate the narrow range which falls within the broad teaching. Moreover, it is submitted that compositions which do fall within the broad teaching of Reischl do not possess the claim required attributes of being a “dye receptive coating”.

What Reischl et al. fail to disclose, however, is a blend of two distinct solvent free aqueous dispersions. The product (a) of Reischl is never itself an aqueous dispersion and the product (b) of Reischl is never itself an aqueous dispersion. Upon a proper reading of claim 7, it can be seen that claim 7 recites that the aqueous coating composition comprises a blend of (a) a first solvent free aqueous dispersion of aliphatic polyether-polyurethane resin, and (b) a second solvent free aqueous dispersion of aliphatic polyester-urethane resin wherein the weight ratio of (a) to (b) is in the range of 1:1 to 3:1. The claimed coating comprises a blend of two distinct aqueous dispersions.

Reischl et al. fail to disclose or teach such a coating. Rather, Reischl et al. teach the combination of a non-dispersible non-salt polyisocyanate and a salt-type polyisocyanate to form a coarsely dispersed sedimenting, but redispersible aqueous dispersion. Furthermore, Reischl et al. fail to teach or suggest that the disclosed coarsely dispersed, sedimentary dispersion would possess the requisite properties to allow the composition to function as a dye receiving coating. Instead, Reischl et al. teach that the polyurethane dispersions are unstable and that they are "coarse dispersions that settle out but are redispersible" (col. 1, lines 20-24: Table 2, column 8, particle size of sedimentation). Because the composition of the sedimenting but redispersible polyurethane dispersion of Reischl et al. is not the same as that of the claimed coating composition, it would not inherently perform as a dye transfer layer.

Accordingly, Appellants submit that Reischl fails to anticipate each and every limitation in the claims as required under 35 U.S.C §102(b). Accordingly, Appellants respectfully request withdrawal of the rejection of claims 7-8, 10, and 12-13.

#### **Rejections Under 35 U.S.C. §103(a)**

Claims 7-10, 12, and 13 have been rejected under 35 USC §103(a) as being unpatentable over Schafheutle et al. (U.S. Patent No. 5,334,690) in view of Bagaglio et al. (EP 0 358 328) and Ozawa et al. (U.S. Publication No. 2002/0176968). Schafheutle et al. disclose polyurethane coatings that include prepolymers that are the reaction product of polyisocyanate and an ionic group containing a polyether

polyol, a polycarbonate polyol or a polyester polyol or mixture thereof. The Examiner contends that it would have been obvious to create separate polyester and polyether prepolymers in Schafheutle et al. since Bagaglio et al. teach it results in a polyurethane having decreased anisotropy. The Examiner further contends that it would have been obvious to arrive at Appellant's claimed range of aliphatic polyether-polyurethane resin dispersion (a) to aliphatic polyester-polyurethane resin dispersion (b) since Ozawa et al. establish the ratio of polyether moieties on the polyurethane backbone to polyester moieties on the polyurethane backbone controls the "surface feeling and gloss" of the resulting coating. Finally, the Examiner contends that although the prior art does not explicitly state that the polyurethane of Schafheutle et al. as modified by Bagaglio and Ozawa is useful in image transfer layers, one of ordinary skill would reasonably expect the polyurethane to exhibit the claimed limitations since it is useful in printing inks and has a composition analogous to the claims.

Appellant respectfully traverses this rejection.

Claim 7 recites that the aqueous coating composition comprises a blend of (a) a first solvent free aqueous dispersion of aliphatic polyether-polyurethane resin, and (b) a second solvent free aqueous dispersion of aliphatic polyester-urethane resin wherein the weight ratio of (a) to (b) is in the range of 1:1 to 3:1.

Schafheutle et al. disclose a polyurethane dispersion obtained by reacting a polyester polyol, a polycarbonate polyol or a polyether polyol or mixture thereof with a polyisocyanate to form a polyurethane dispersion that is suitable as a binder for coatings, adhesives or printing inks. Schafheutle teaches that a water-soluble or water-dispersible polyaziridine may be used as a crosslinking agent added during formulation of water-dispersible paints using the polyurethane dispersion according to the invention. The Examiner acknowledges that there is no suggestion in Schafheutle to form a coating composition comprising a blend of (a) a first solvent free aqueous dispersion of aliphatic polyether-polyurethane resin; and (b) a second solvent free aqueous dispersion of aliphatic polyester-polyurethane resin.

The Examiner relies on Bagaglio for the teaching of a blend of two distinct polyurethane dispersions. However, this reliance is misplaced, as Bagaglio fails to teach a coating composition comprising two distinct polyurethane dispersions. Rather, Bagaglio discloses a polyester prepolymer and a polyether prepolymer that are prepared separately and then combined and reacted with a polyol to produce a polyurethane. The intermediate combination of the polyester prepolymer and the polyether prepolymer is an isocyanate composition having a free NCO content of 8-25%, and is not a polyurethane dispersion. It is disclosed that the isocyanate compositions can be used for preparing microcellular

elastomers, widely used for shoe soling and preparing polyurethane foams. One skilled in the art would not have modified the polyurethane dispersion of Schafheutle et al. based on the isocyanate composition of Bagaglio motivated by the prospect of producing a polyurethane "having decreased anisotropy." ***Even if such motivation existed, the result would not be a blend of two distinct polyurethane dispersions.***

Furthermore, Ozawa et al. does not teach or suggest a blend of two distinct polyurethane dispersions. Rather, Ozawa et al. disclose a polyurethane dispersion that is the reaction product of a polyisocyanate compound and an active hydrogen compound. It is disclosed that the active hydrogen compound contains 40-80% by weight of a polyether polyol. Ozawa et al. teaches that by using the polyether polyol compound in the polyurethane resin, the surface feeling and gloss of the paper to which the coating is applied is better than if an identical weight of an ester polyol compound, carbonate polyol compound or caprolactone polyol compound were used as the active hydrogen compound. Contrary to the Examiner's assertion, this is not a teaching of an amount of polyether polyol relative to an amount of polyester polyol in the polyurethane backbone. Even if it were such a teaching, it is not a teaching of the amount of a first solvent free aqueous dispersion of aliphatic polyether-polyurethane resin relative to the amount of a second solvent free aqueous dispersion of aliphatic polyester-urethane resin in a blend of two distinct polyurethane resins.

Appellant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness because even if one skilled in the art were motivated to make all of the modifications the Examiner has suggested with respect to the Schafheutle polyurethane coating, the Bagaglio isocyanate prepolymer composition and the Ozawa inkjet coating, the resulting composition would not be that claimed by Appellant. Accordingly, Appellant respectfully requests withdrawal of the rejection of claims 7-10, 12, and 13 under 35 USC §103(a) as based on Schafheutle et al. in view of Bagaglio et al., and further in view of Ozawa et al.

Claim 9 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Reischl et al. in view of Rhoades et al. The Examiner contends that Reischl et al. teach water-dispersible polyurethane that consists of polyether and polyester based resins and multi-functional chain extender, and that it would be obvious to modify Reischl et al. with polyaziridine as the crosslinking agent as disclosed in Rhodes et al. based on the motivation that both compositions are water-dispersible polyurethanes and polyaziridine improves the performance properties of the resulting cured coating.

Appellant respectfully disagrees with the Examiner's contention. As discussed above, Reischl et al. is directed toward an aqueous polyurethane dispersion comprising (a) a non-salt polyisocyanate

polyaddition product obtained from compounds containing hydroxyl and/or amino groups and organic polyisocyanates derived from an organic solution, and (b) a salt type polyisocyanate polyaddition compound derived from a solid or solution in a weight ratio of (a) to (b) from 99.5:1 to 2:3. The dispersion is produced by combining the polyisocyanate polyaddition product with a **solvent**, adding the salt type polyisocyanate polyaddition compound in the form of a solid or solution, effectuating salt formation by the addition of suitable acids, and adding water to the solution to achieve the desired solids content of 60 percent. It is the conversion of the polyisocyanate polyaddition product with the salt-type polyisocyanate polyaddition compound and acid that yields the dispersion. The non-salt polyisocyanate polyaddition product (a) is not water dispersible before conversion with the salt-type polyisocyanate polyaddition compound (b). ***The product (a) of Reischl is never itself an aqueous dispersion and the product (b) of Reischl is never itself an aqueous dispersion.*** Accordingly, Reischl et al. fails to disclose or suggest an aqueous coating composition comprising a blend of (a) a first **solvent free** aqueous dispersion of aliphatic polyether-polyurethane resin, and (b) a second **solvent free** aqueous dispersion of aliphatic polyester-urethane resin.

Furthermore, Reischl et al. fail to disclose, teach, or suggest that the dispersion may be used as a dye receiving coating. Instead, Reischl teaches that the combination of a non-dispersible non-salt polyisocyanate and a salt-type polyisocyanate forms a coarsely dispersed sedimenting, but redispersible aqueous dispersion. There is no teaching or suggestion that the coarsely dispersed, sedimentary dispersion would possess the requisite properties to allow the composition to function as a dye receiving coating. Moreover, Reischl fail to teach or motivate one skilled in the art to formulate the blend of solvent free aqueous dispersions in the ratio of 1:1 to 3:1. Again, the ratio of components of the blend of Reischl as taught by Reischl would not result in a product which has the claim required dye receptive properties.

Rhoades et al. disclose a receiver sheet made up of a supporting substrate, a receiving layer on one surface of the supporting substrate, and a dye-permeable release medium coated onto the receiving layer or incorporated into the receiving layer. (Col. 3, lines 11-23.) The receiving layer of Rhoades et al. comprises a polyester resin. (Col. 12, lines 30-47.) The dye-permeable release medium of Rhoades et al. is a silicone-urethane resin that may include an aziridine crosslinking agent (Col. 3, line 62-64, col. 6, lines 7-37). The siliconurethane is dye-permeable, not dye receptive. It is the polyester layer that receives the dye. Even if one of ordinary skill in the art were to modify the dispersion of Reischl by adding the aziridine crosslinking agent of the dye release coating of Rhoades et al., the resulting dispersion would not be the claimed dye receiving coating composition.

In view of the above, Appellants submit that the combination of Reischl in view of Rhodes fails to render the invention of claim 9 obvious under 35 U.S.C. §103(a). As such, Appellants respectfully request withdrawal of the rejection of claim 9 under 35 USC §103(a).

Respectfully submitted,  
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## VIII. CLAIMS APPENDIX

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. An aqueous dye receiving coating composition comprising a blend of:  
(a) a first solvent free aqueous dispersion of aliphatic polyether-polyurethane resin; and  
(b) a second solvent free aqueous dispersion of aliphatic polyester-polyurethane resin, wherein the weight ratio of resin (a) to resin (b) is in the range of 1:1 to 3:1, based on the resin solids of (a) and (b).
8. The dye receiving coating composition of claim 7 further comprising a multifunctional crosslinking agent.
9. The dye receiving coating composition of claim 8 where the multifunctional crosslinking agent comprises a polyfunctional aziridine.
10. The dye receiving coating composition of claim 7 wherein the coating composition is free of organic solvent.
11. (Cancelled)

12. The dye receiving coating composition of claim 7 wherein the aliphatic polyether-polyurethane resin (a) comprises the reaction product of an aliphatic polyisocyanate component and a polyether polyol component.

13. The dye receiving coating composition of claim 7 wherein the aliphatic polyester-polyurethane resin (b) comprises the reaction product of an aliphatic polyisocyanate component and a polyester polyol component.

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)



**IX. EVIDENCE APPENDIX**

None.

**X. RELATED PROCEEDINGS APPENDIX**

None.